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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/673,808	01/12/2001	Mark Poletti	0074-26485GW	5524

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EXAMINER

CHAU, COREY P

ART UNIT	PAPER NUMBER
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2644

DATE MAILED: 08/25/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/673,808

Applicant(s)

POLETTI, MARK

Examiner

Corey P Chau

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 July 2000.
2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 1-12 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 2, 3, 4, 9, 10, and 11 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Claims 2, 3, 4, 9, 10, and 11 is nonenabling because Claim 1 recites "one or more microphones", wherein the case where one microphone is used, only one input is inputted to a matrix or matrices, therefore not able to cross couple the input signal to any other signals.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1, 2, 3, 4, 5, 8, 9, 10, 11, and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5440639 to Suzuki et al. (hereafter as Suzuki).

5. Regarding Claim 1, Suzuki discloses a sound localization control apparatus (i.e. an in-line early reflection enhancement system)(Fig. 5) comprising: one or more microphones positioned close to one or more sound sources within a room or other spaces so as to detect predominantly direct sound (i.e. acoustic data S1, S2, and so on, which is obvious that the signal was initially received from one or more microphones)(Fig. 5; column 1, lines 10-13); an early reflection generating stage (Fig. 5) which has a finite impulse response (9L1-9L12 and 9R1-9R12) (Figs. 3 and 5; column 2, lines 37-53; column 6, lines 40-56); and which without internal feedback generates a number of delayed discrete reproductions of the microphone signals and which has unitary power gain whereby the stability of the system is independent of delay is independent of delay times and amplitudes (i.e. it is obvious that a FIR filter generates a number of delayed discrete reproductions without internal feedback, which has a unitary power gain); and a number of loudspeakers placed to broadcast said delayed discrete reproductions of the microphone signals into the room or other spaces (L and R outputs).

6. Regarding Claim 2, Suzuki as modified discloses the early reflection stage also includes at least one cross coupling matrix (Fig. 5, references 6S1, 6S2, 7L1 to 7L12, 7R1 to 7R12, 8L1 to 8L12, and 8R1 to 8R12).

7. Regarding Claim 3, Suzuki as modified discloses the early reflection generating stage includes a series connection of two or more cross-coupling matrices (i.e. matrix one: 6S1, 6S2, 7L1 to 7L12, 7R1 to 7R12, 8L1 to 8L12, and 8R1 to 8R12; matrix two:

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outputs from 9L1 to 9L12 and 9R1 to 9R12, 10L, and 10R) with a set of delay lines positioned between the two matrices (9L1 to 9L12 and 9R1 to 9R12).

8. Regarding Claim 4, Suzuki as modified discloses said cross-coupling matrix or matrices are orthonormal matrices (i.e. acoustic data (S1, S2, ...) which may provide twelve acoustic data (S1 – S12) to matrix, 6S1, 6S2, 7L1 to 7L12, 7R1 to 7R12, 8L1 to 8L12, and 8R1 to 8R12)(column 5, lines 31-48; column 6, lines 40-56).

9. Regarding Claim 5, Suzuki as modified discloses each input is coupled to every output to provide a maximization of diffusion of the input signals to all of the outputs (i.e. acoustic data (S1, S2, ...) which may provide twelve acoustic data (S1 – S12) to matrix, 6S1, 6S2, 7L1 to 7L12, 7R1 to 7R12, 8L1 to 8L12, and 8R1 to 8R12)(column 5, lines 31-48. Therefore each input is coupled to every output to provide a maximization of diffusion).

10. Claim 8 is essentially similar to Claim 1 and is rejected for the reasons stated above apropos to Claim 1.

11. Claim 9 is essentially similar to Claim 2 and is rejected for the reasons stated above apropos to Claim 2.

12. Claim 10 is essentially similar to Claim 3 and is rejected for the reasons stated above apropos to Claim 3.

13. Claim 11 is essentially similar to Claim 4 and is rejected for the reasons stated above apropos to Claim 4.

14. Claim 12 is essentially similar to Claim 5 and is rejected for the reasons stated above apropos to Claim 5.

15. Claims 1, 2, 3, 4, 7, 8, 9, 10, 11, and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5555306 to Gerzon.

16. Regarding Claim 1, Gerzon discloses an audio signal processing providing simulated source distance control (i.e. an in-line early reflection enhancement system)(Fig. 10) comprising: one or more microphones positioned close to one or more sound sources within a room or other spaces so as to detect predominantly direct sound (i.e. L and R inputs, which is obvious that the signal was initially received from one or more microphones); an early reflection generating stage (Fig. 10) which has a finite impulse response (1_M , 1_D) (Fig. 4) and which without internal feedback generates a number of delayed discrete reproductions of the microphone signals and which has unitary power gain whereby the stability of the system is independent of delay is independent of delay times and amplitudes (i.e. it is obvious that the early reflection simulator generates a number of delayed discrete reproductions without internal feedback, which has a unitary power gain) (column 7, line 45 to column 8 line 26); and a number of loudspeakers placed to broadcast said delayed discrete reproductions of the microphone signals into the room or other spaces (outputs from 9L and 9R).

17. Regarding Claim 2, Gerzon as modified discloses the early reflection stage (Fig. 10) also includes at least one cross coupling matrix (51) (equation 44).

18. Regarding Claim 3, Gerzon as modified discloses the early reflection generating stage (Fig. 10) includes a series connection of two or more cross-coupling matrices (51,

52) (equations 44 and 45) with a set of delay lines positioned between the two matrices ($3_M, 3_D$).

19. Regarding Claim 4, Gerzon as modified discloses said cross-coupling matrix or matrices are orthonormal matrices (51,52) (i.e. matrices 51 and 52 has two inputs with two outputs).

20. Regarding Claim 5, Gerzon as modified discloses each input is coupled to every output to provide a maximization of diffusion of the input signals to all of the outputs (i.e. each input of matrix 51 is coupled to every output of matrix 51, therefore providing a maximization of diffusion)(Fig. 10; equations 44 and 45).

21. Claim 8 is essentially similar to Claim 1 and is rejected for the reasons stated above apropos to Claim 1.

22. Claim 9 is essentially similar to Claim 2 and is rejected for the reasons stated above apropos to Claim 2.

23. Claim 10 is essentially similar to Claim 3 and is rejected for the reasons stated above apropos to Claim 3.

24. Claim 11 is essentially similar to Claim 4 and is rejected for the reasons stated above apropos to Claim 4.

25. Claim 12 is essentially similar to Claim 5 and is rejected for the reasons stated above apropos to Claim 5.

26. Claims 6 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5555306 to Gerzon in view of PCT/NZ93/00041 to Poletti.

27. Regarding Claim 6, Gerzon discloses an audio signal processing providing simulated source distance control (i.e. an in-line early reflection enhancement system. It is obvious to one having ordinary skill in the art at the time the invention was made to combine the audio signal processing providing simulated source distance control with a wideband non-in-line assisted reverberation system in order to improve and control the acoustic of a concert hall or auditorium (page 1, paragraph 0001). Poletti discloses a wideband assisted reverberation system which increases apparent room volume, including multiple loudspeakers to broadcast sound into the room, and a reverberation matrix connecting a similar bandwidth sound from each microphone through one or more reverberators having an impulse response consisting of a number of echoes the density of which increases over time, to one or more loudspeakers (claims 1 and 2).

28. Regarding Claim 7, Gerzon as modified discloses an audio signal processing providing simulated source distance control (i.e. an in-line early reflection enhancement system. It is obvious to one having ordinary skill in the art at the time the invention was made to combine the audio signal processing providing simulated source distance control with a wideband non-in-line assisted reverberation system in order to improve and control the acoustic of a concert hall or auditorium (page 1, paragraph 0001). Poletti discloses said wideband non-in-line assisted reverberation system the reverberation matrix connects a similar bandwidth signal from each microphone through one or more reverberators to at least two loudspeakers each of which receives a signal comprising a sum of at least two reverberated microphone signals (claims 1, 2, and 3).

Conclusion

29. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).


A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

30. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Corey P Chau whose telephone number is (703)305-0683. The examiner can normally be reached on Monday - Friday 9:00 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Forester W Isen can be reached on (703)305-4386. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

August 23, 2004


FORESTER W. ISEN
SUPERVISORY PATENT EXAMINER